draft-friel-acme-integrations

Friel, Barnes Cisco

Shekh-Yusef Avaya

TL;DR

- Describes how ACME RFC 8555 can be integrated with multiple existing client / device certificate enrolment mechanisms without requiring any changes required to ACME

Multiple Client / Device Integration Use Cases

1. EST
   - RFC 7030: Enrollment over Secure Transport
2. BRSKI
   - draft-ietf-anima-bootstrapping-keyinfra: Bootstrapping Remote Key Infrastructures
3. BRSKI Cloud Registrar
   - draft-friel-anima-brski-cloud: Specifies BRSKI behaviour with default cloud registrar
4. **TEAP**
   - **RFC 7170: Tunnel Extensible Authentication Protocol**
5. **TEAP Update and Extensions for Bootstrapping**
   - **draft-lear-eap-teap-brski: PKCS#10 / PKCS#7 Updates and BRSKI Extensions**

What has changed since IETF 105

- ACME subdomain use case split out into separate document
  - draft-friel-acme-subdomains
  - Nice optimisation for issuing a large number of client certificates

- BRSKI Cloud Registrar use case added
  - draft-friel-anima-brski-cloud

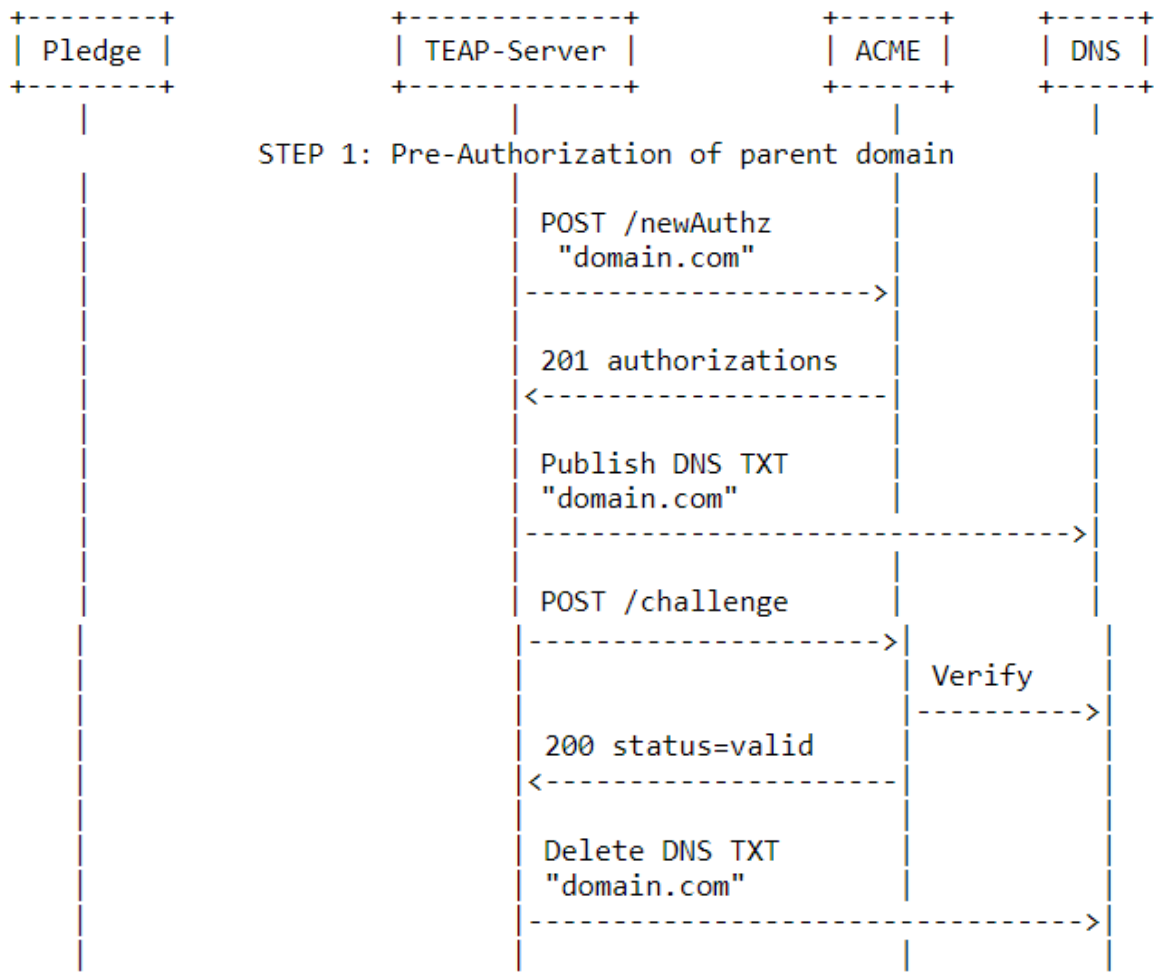
- draft-lear-eap-teap-brski Updates
  - PKCS#10 Retry Handling added to handle scenario where CA is willing to issue a certificate, but just not yet

Client / device certificate integrations

- EST
  - Defines the protocol that clients use to enrol with an EST Registration Authority (RA) using PKCS#10 / PKCS#7 payloads
  - EST does not define the mechanism that the RA uses to talk to the CA
- BRSKI certificate enrolment leverages EST
  - EST<->ACME Integrations are equally applicable to BRSKI
- TEAP
  - Defines the protocol that clients use to enrol with a TEAP server using PKCS#10 / PKCS#7 payloads
  - TEAP does not define the mechanism that the TEAP server uses to talk to the CA

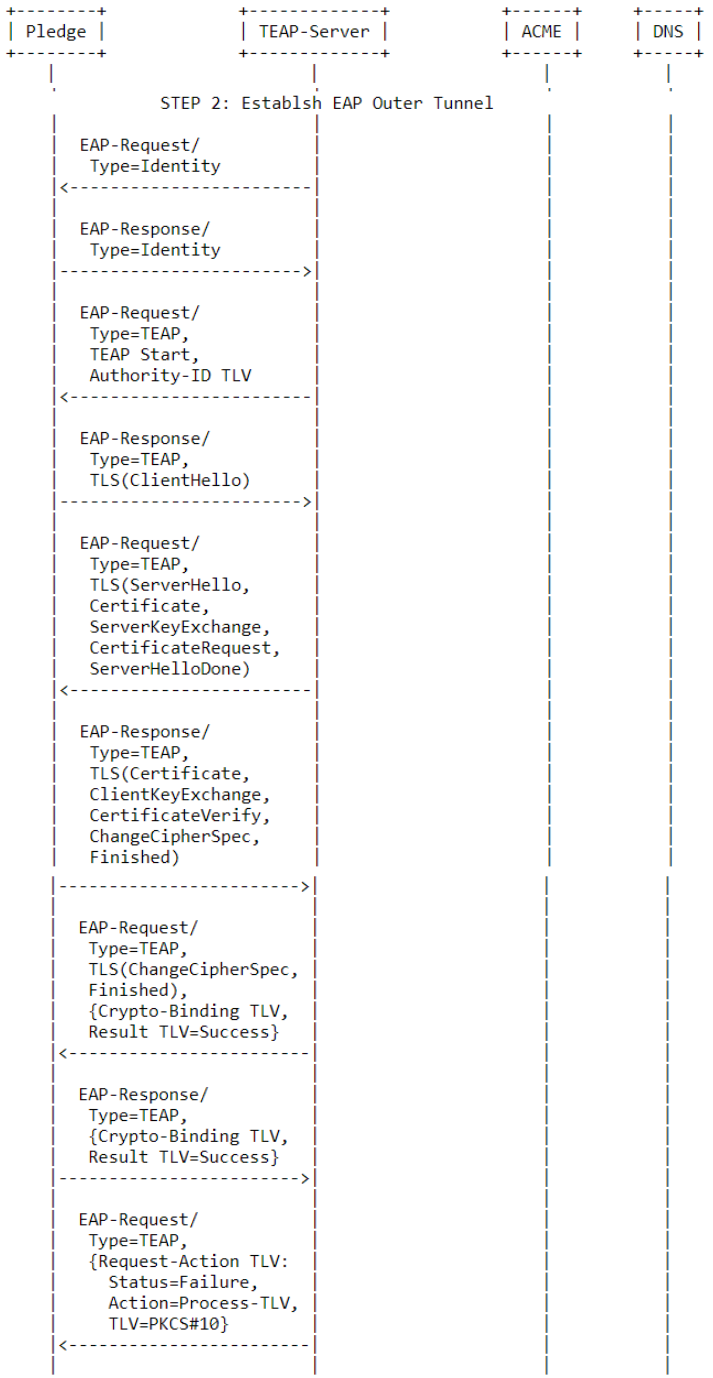
TEAP -> ACME 1 of 3

- ACME domain authorization



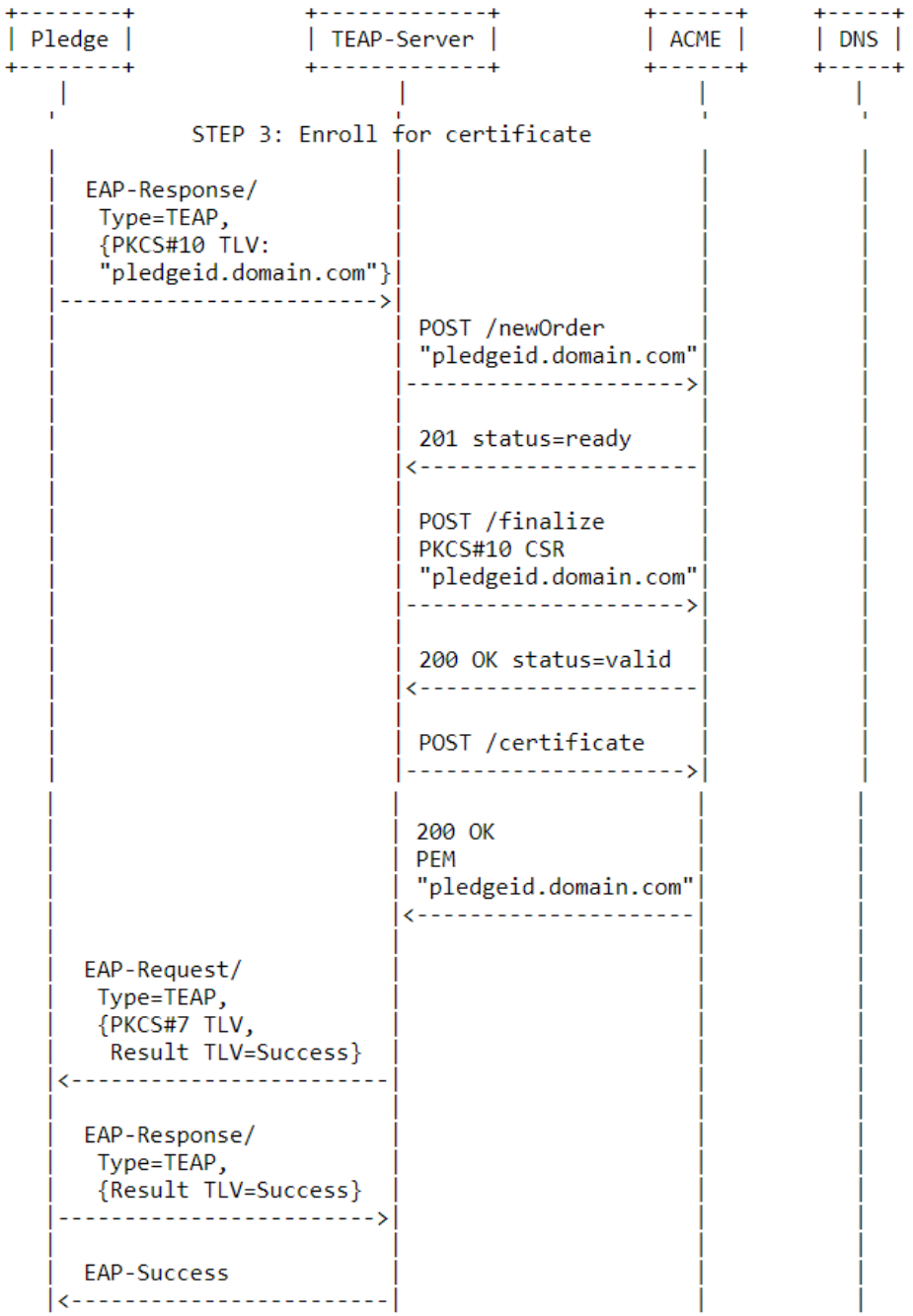
TEAP -> ACME 2 of 3

- Peer establishes TEAP outer TLS tunnel



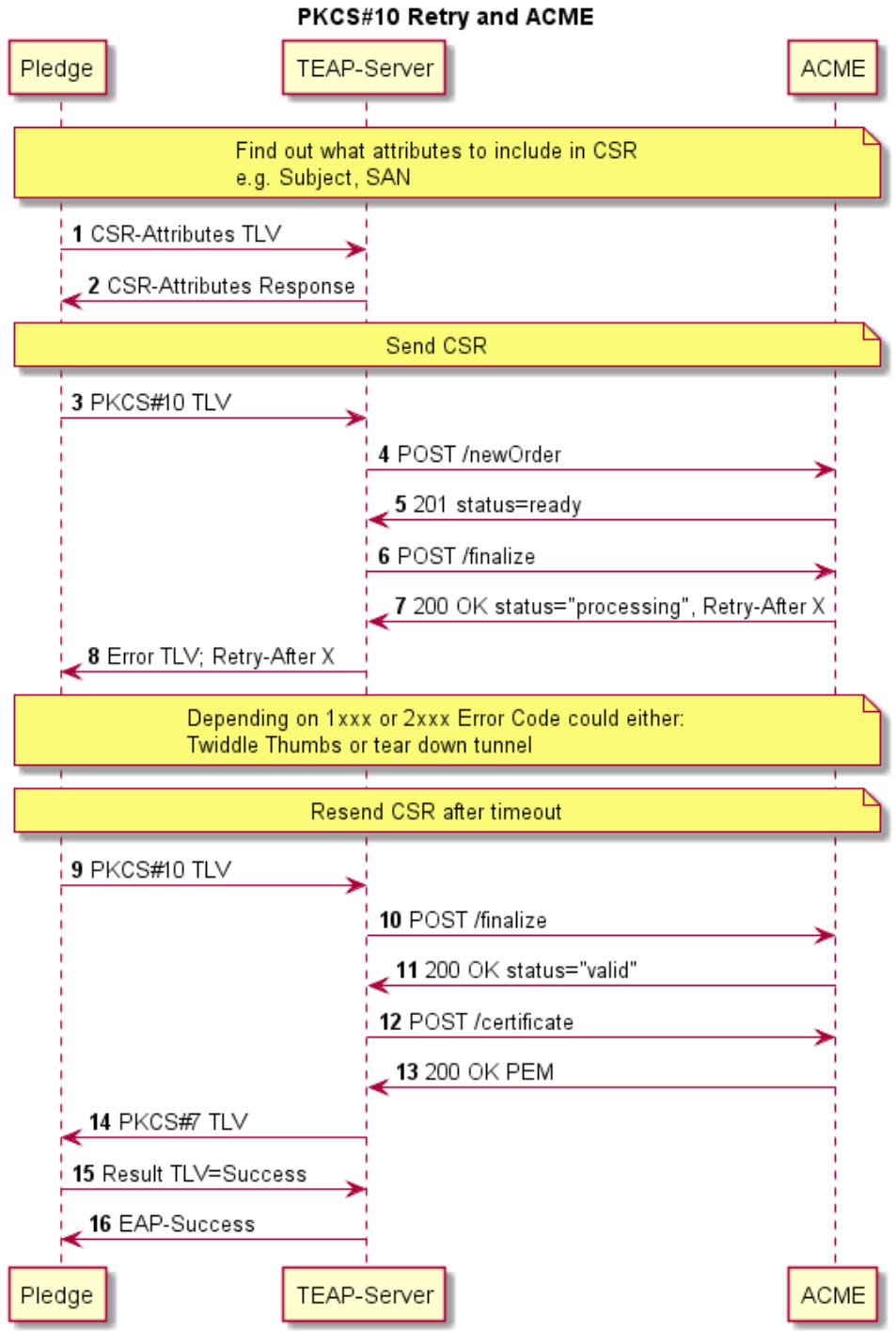
TEAP -> ACME
3 of 3

- Peer enrols for certificate



PKCS#10 Retry Handling

- Retry could be inside same tunnel or in new tunnel
- Depends on error code of Error TLV with Retry-After TLV
- 1xxx: inside same tunnel
- 2xxx: tear down tunnel



Discussion

- To do: Security considerations

- Integrations span across ACME, ANIMA, EMU WGs
- Where does this belong?
- Is there interest in continuing this work?

- Next Steps?